

INFORMATION

AGENDA ITEM: Telecommunications Infrastructure

The Library of California Act includes provisions for telecommunications services to support Californians, their libraries, and the various programs of the Act in Sections 18842, for Regional Library Networks, and 18850, in Statewide Services. Initial funding for these programs is called for in SEC.2.: "The sum of \$5,000,000 is hereby appropriated from the General Fund to the Library of California Board for the purpose of funding the startup phase of the Library of California...to pay the costs of... (a) Telecommunications infrastructure to support up to 1,000 libraries, including, but not limited to, the costs of linking systems and installing regional servers."

GENERAL OVERALL PROGRAM UPDATES:

CURRENT STATUS: A strong focus of the Library of California is the development and support of a telecommunications network to enable all libraries to share their resources with each other. Z39.50 is a protocol that allows for the searching of one or more library online catalogs over the Internet, regardless of the proprietary software and hardware on each local computer system. The Board's decision to continue and expand the Z39.50 server software support and server access programs is facilitating the development of a network of virtual library catalogs for access by California library users. It is critical that this network be developed and maintained to establish a statewide database that reflects the most current holdings of California's libraries and to support sharing of resources for all Californians.

At its February 1999 meeting the Board directed its Chief Executive Officer to implement a Z39.50 server software reimbursement program for libraries who meet the eligibility requirements for participation in the Library of California and technical requirements that promote open access to library catalogs via Z39.50 and the Internet. Other specifications used to screen or prioritize applicants include participation in multitype resource sharing through an affiliation with a CLSA Cooperative Library System; or through participation in the CLSA Interlibrary Loan reimbursement program; or by type of library and geographic distribution. A maximum of 100 grants may be awarded at \$7,500 each for a total of \$750,000 from Library of California funds. Grants will be made available in multiple cycles, extending into FY 1999/2000, until

funds are exhausted. In response to the February directions staff prepared and distributed application materials, with an initial deadline of April 30. Twenty-five applications were received in the first cycle, representing libraries of all types from throughout California.

Awards were granted to seventeen libraries. An additional four are considered “pending” based on eligibility questions. Of the twenty-one awards, two were returned when the applicant libraries determined that they would not be able to install the software within the given time-frame after discussions with their integrated library system vendors and two were determined to be ineligible for technical reasons.

Z39.50 Applications - Cycle 1 Awards

Name of Library	Type of Library	Region
Library of Hope International University	Academic	4
United States International University	Academic	5
La Sierra University	Academic	5
Willows Public Library	Public	1
Sacramento Public Library	Public	3
San Bernardino County Library	Public	5
Paradise Unified School District, Paradise	School	1
Paradise High School Library, Paradise	School	1
Union Mine High School,	School	3
Sacramento Country Day School, Sacramento	School	3
San Pedro High School Library	School	4
St. Joseph Library	School	4
Paso Robles High Unified S.D.	School	7
California Institute of Integral Studies, San Francisco	Special	2
Monterey Institute of International Studies	Special	2

In July staff released materials for a second cycle of grants ending September 24, 1999. Eighteen applications were received and were under review at the time this report was written. As with the earlier group, they represent multitype libraries in most planning regions. The advice of the Board to expand the eligibility somewhat to include libraries that were purchasing new systems, along with libraries with existing systems, was helpful to several applicants. It is expected that additional grants will have been made before the November Board meeting. Assuming that all eighteen new applicants receive awards, the total number will be thirty-three for a total of \$247,500.

Based on some minor problems encountered with the existing documentation, staff will also revise both the application and grant award materials to be consistent with current Board guidelines for the awards, and to simplify the reporting process. Staff will then proceed to initiate another grant cycle immediately following the November Board meeting. Every effort will be made to inform as many libraries as possible about the availability of these grants. The announcement will be mailed to a broad list and it will be posted to multiple electronic mail lists used by all types of libraries throughout California, and on the Library of California web site.

Remote Access Issue:

During the process of developing this program, and coordinating it with the CLSA Statewide Data Base Z39.50 grants, it was determined that there was some confusion with the definition of “remote access” to a Z39.50 server. A simple security scheme used by some libraries is to limit access to their servers to only one “client” computer system using its unique I.P. (Internet Protocol) address. This means that other clients cannot search the system because their I.P. addresses are not authorized. In projects where there is a regional gateway client (e.g., MOBAC or 49-99 Cooperative Systems) the gateway client is the authorized I.P. address. What this means is that remote searching of the server is possible only through the authorized gateway client. This meets one definition of “remote access” because the client is available to anyone who wants to search it, as long as they have Internet access and a browser such as *Microsoft Explorer* or *Netscape*.

A preferred definition of “remote access” is to allow access by any remote client, without limitation by I.P. address. This model is preferred because it allows for a greater level of access, using a variety of search profiles, from a variety of search sites. However, it requires that libraries provide security by mechanisms other than I.P. filtering. Each library’s network and Internet connection is different. Therefore, each security solution will be different. It is likely, however, that there will be an additional cost to the library in software and hardware, such as the purchase of a firewall server to screen access on a more sophisticated level.

It should be noted that many libraries provide remote Z39.50 access without I.P. filtering or other similar restrictive access technologies and that the goal of open client access is achievable with most library servers and networks.

At this time staff recommends the following:

- Those libraries that use I.P. filtering, or other similar restrictive access mechanisms continue to be eligible for the CLSA Z39.50 support subsidies, pending additional study of this issue.
- That staff continue to study Z39.50 remote access and develop a policy and recommendations to address the issue of I.P. filtering and to promote open remote client access. Such recommendations might include increasing the server software subsidy to include more sophisticated security technologies.
- That future Z39.50 server software grant applications request additional information from the applicants as to how they will facilitate remote client access to their servers, without being restricted by I.P. filtering. It is recommended that grants continue to be awarded to libraries who use I.P. filtering in their initial projects as long as they agree to become accessible via a Z39.50 regional gateway client, where available, and develop a continuation plan to allow for remote client access, without I.P. filtering.

RELATED ISSUES TO COME BEFORE THE BOARD IN THE FUTURE:

Telecommunications Discount Programs

California Teleconnect Fund:

California libraries are eligible for 50% telecommunications discounts on selected services under a program called the California Teleconnect Fund (CTF) or Discounted Advanced Services (DAS). The application process is simple. The library requests a certification form of eligibility from the California State Library. Once they have the form, they apply for the discount through their telecommunications carrier(s). They do not need to reapply on an annual basis and they do not need to file any additional paperwork.

The California Teleconnect fund is administered by the California Public Utilities Commission (CPUC). Those libraries that were eligible for participation in state-based plans for funds under Title III of the Library Services and Construction Act (now superseded by the Library Services and Technology Act), qualify for the discounted rates for libraries. In California, this means all libraries of all types that share resources with other libraries. There is no limit on the number of discounted lines that a qualified library may have. Qualifying libraries may receive a 50% discount for all 1MB, Centrex, PBX Trunks, Switched 56, Integrated Services Digital

Network (ISDN) service, T-1 service, DS-3, selected speeds of Advanced Digital Network (ADN), Switched Multimegabit Data Service (SMDS), Asynchronous Transfer Mode (ATM) and Frame Relay Service.

A review of existing documentation indicates that at least 200 libraries have received certification from the California State Library, and are therefore assumed to be participating in the program. A partial list assembled from LDS files is included with this report (Exhibit A). It should be noted that the list is compiled from records of certificates sent by the Library Development Services Bureau. In some cases certificates were provided for each branch of a library system. In other cases the certificate was provided for the entire library system. Therefore, the actual number of library sites covered by the program is well in excess of the number of certificates provided. It should also be noted that the provision of a certificate does not necessarily guarantee that the library was successful in participating in the program.

After compiling this list staff determined that additional outreach to libraries may be needed. Steps are underway to ensure that as many libraries as possible participate in this program.

Universal Services Discount (E-Rate):

The E-Rate is a federal telecommunications discount program, administered by the Schools and Libraries Division of the Universal Services Administration Company. Public and school libraries and library consortia that include public libraries are eligible for discounted services. Eligible schools and libraries may purchase all commercially available telecommunications services at discounted prices. Internet access and installation and maintenance of internal connections are also eligible for discounted rates. This program provides discounts as listed below:

% of students eligible for

<u>national school lunch program</u>	<u>urban discount (%)</u>	<u>rural discount (%)</u>
0.00 - 0.99	20	25
1.00 - 19.49	40	50
19.50 - 34.49	50	60
34.50 - 49.49	60	70
49.50 - 74.49	80	80
74.50 - 100.00	90	90

The application process is more rigorous for the E-Rate. Libraries must file a series of forms as they move through the process. They also must file a three-year technology plan with the State Library if they are requesting discounts on any services beyond their standard telephones. Requested services must be posted on the SLD web site to invite competitive bidding. Libraries are also responsible for

calculating their discount rates, which is difficult when multiple school districts are within the library service area.

Due, in part, to the complexity of the application process, as well as the difficulty of coordinating local vs. SLD bidding requirements, some public libraries have declined to participate. The list of awards for the current year (with the award process still underway) is as follows:

**E-RATE FUNDING COMMITMENTS - YEAR 2,
THROUGH WAVE 15
10/21/99**

Wave	Library	Amount
3	Alameda County Library	\$18,572.52
2	Altadena Library District	\$13,700.13
3	Arcadia Public Library	\$7,200.00
15	Azusa City Library	\$94,163.06
14	Beale Memorial Lib (Bakersfield)	\$6,979.20
5	Belvedere-Tiburon Library	\$2,880.00
5	Bruggemeyer Memorial Library	\$10,176.00
5	Buellton Branch Library	\$302.40
5	Buena Park Library District	\$2,844.80
15	Carlsbad City Library	\$29,290.50
3	Chula Vista Public Library	\$13,439.40
1	Colusa County Library	\$8,714.50
5	Coronado Public Library	\$3,902.40
2	Covina Public Library	\$1,497.60
8	Covina Public Library	\$1,635.60
5	Fresno County Free Library	\$14,341.87
1	Glendale Public Library	\$1,099.80
3	Kern County Library System	\$54,528.00
1	Kings County Library	\$2,184.00
5	Lake County Library	\$4,140.00
7	Lompoc Public Library	\$3,864.00
1	Napa City-county Library	\$4,917.50
4	National City Public Library	\$9,471.60
8	National City Public Library	\$54,341.28
14	National City Public Library	\$38,385.90
15	National City Public Library	\$13,677.67
3	Nevada County Library	\$1,684.80
1	Ontario City Library	\$15,523.32
6	Pasadena Public Library	\$127,547.76

1	Plumas County Library	\$4,140.00
14	Plumas County Library	\$9,826.80
5	Pomona Public Library	\$14,385.60
4	Redwood City Public Library	\$2,604.96
5	Redwood City Public Library	\$1,165.80
3	Richmond Public Library	\$11,807.58
5	San Bernardino County Library	\$203,718.36
6	San Bernardino Public Library	\$67,632.30
3	San Diego County Library	\$50,488.48
1	San Diego Public Library	\$45,118.08
4	San Jose Public Library	\$22,666.36
5	San Jose Public Library	\$38,805.24
15	San Jose Public Library	\$19,482.15
3	San Leandro Community Library	\$19,139.40
1	Santa Ana Public Library	\$44,079.30
8	Santa Ana Public Library	\$7,395.25
1	Santa Clara County Free Library	\$12,500.00
4	Santa Fe Springs City Library	\$20,917.44
5	Santa Fe Springs City Library	\$9,412.61
2	Santa Maria Public Library	\$1,172.43
6	Santa Maria Public Library	\$8,906.15
1	Sausalito Public Library	\$3,758.40
5	Shasta County Library	\$3,970.13
1	Sierra Madre Public Library	\$3,129.60
1	Siskiyou County Library	\$8,606.33
1	Sonoma County Library	\$50,946.00
9	Sonoma County Library	\$24,047.40
1	St. Helena Public Library	\$2,700.00
13	Watsonville Public Library	\$6,673.80
4	Whittier Public Library	\$14,880.00
8	Whittier Public Library	\$5,828.00
9	Whittier Public Library	\$13,542.23
1	Yolo County Library	\$6,624.72
1	Yuba County Public Library	\$4,512.00

Total \$1,325,588.51

While \$1,325,588.51 is a significant amount of reimbursement, it is only .97% (less than 1%) of the total of \$136,304,584.79 awarded in California, with more than 99% going to schools. The reasons for this significant difference are varied, even with the stipulation that there are many more school sites than library sites in the state. It is

possible that at least part of the reason is that it is easier for schools to apply because they have fewer problems determining their discount rates and because they can manage their purchasing processes to integrate more closely with SLD application cycles. Also, because they frequently deal with federal programs and grants they may be more prepared to handle complex grant programs. A list of all California awards can be made available if needed.

To stimulate additional interest in this program the State Library, Schools and Libraries Division, and Pacific Bell will present a program on the E-Rate at the California Library Association Conference in Palm Springs on Sunday, November 14.

Gates Library Initiative:

California public libraries completed their Gates Library Initiative (GLI) pre-application workshops on October 21, 1999. The initial cycle of workshops were held in August for Southern California libraries with library service area populations of less than 100,000. A second cycle was also held in October for libraries in Northern California with service populations less than 100,000 and for all California libraries with service populations between 100,000 and 300,000. The GLI changed their strategy for the largest public libraries (300,000+) in October by launching a national program for all eligible libraries of that size throughout the United States. Deadlines vary, but the last date for filing applications was November 5.

Southern California libraries (less than 100K service area) participating in the application process are:

A. K. Smiley Public Library	Redlands
Alhambra Public Library	Alhambra
Altadena Library District	Altadena
Azusa City Library	Azusa
Banning Unified School District Library District	Banning
Beaumont Library District Library	Beaumont
Blanchard Community Library	Santa Paula
Brawley Public Library	Brawley
Bruggemeyer Memorial Library	Monterey Park
Camarena Memorial Public Library	Calexico
City of Commerce Public Library	Commerce
Coalinga -- Huron USD Library District	Coalinga
Colton Public Library - Main Library	Colton
Covina Public Library	Covina
El Centro Public Library	El Centro

Hemet Public Library	Hemet
Imperial County Free Library	El Centro
Inyo County Free Library	Independence
Lompoc Public Library	Lompoc
Mariposa Library	Mariposa
Monrovia Public Library	Monrovia
National City Public Library	National City
Palm Springs Public Library	Palm Springs
Palo Verde Valley District Library	Blythe
Placentia Library	Placentia
Porterville Public Library	Porterville
Santa Fe Springs City Library	Santa Fe Springs
Santa Monica Public Library	Santa Monica
Signal Hill Public Library	Signal Hill
Tulare Public Library	Tulare
Toulumne County Library	Sonora
Upland Public Library	Upland
Whittier Public Library	Whittier

In addition to computer systems for local library outlets, libraries with service populations of greater than 100,000 are also eligible for computer training laboratories, consisting of eleven computers, a projection system, and other equipment and software. The GLI asked the State Library to coordinate parts of this application process. In addition, the State Library through the InFoPeople project, provided additional grant opportunities to double the size of the laboratories for ten California public libraries. Awards for the lab expansion will be based on the library's ability to meet InFoPeople requirements, along with geographical distribution to provide access to all of California's public libraries.

Of particular interest to the Library of California Board is the selection by the Gates Center for Technology Access (GCTA – technical support for the GLI) of CSU's 4Cnet as the Internet service provider for libraries without pre-existing dedicated Internet access. As described on the 4Cnet web site (<http://www.4cnet.org>):

“In 1984, the California State University (CSU) system established "CSUnet", a dedicated data network linking each of the campuses of the CSU. The network was created as one of several efforts to meet the increasing information technology demands of the University system and its campuses throughout the State. CSUnet continually modified and expanded its programmatic functions and technical resources to keep current with state-of-the-art inter-network services and applications. CSUnet's purpose has been to serve the University's academic

and administrative mission, goals and objectives in ways that exploit centralized and distributed information resources.

The State of California authorized auxiliary funding in the 1996-97 fiscal year to the California Community Colleges (CCC) "to assure that each of the 125 (campus and district office) sites have established necessary infrastructure capability for teleconferencing, connections to CSUnet and satellite downlink" capabilities.

In response to this funding allocation, the CSU and CCC have implemented a working relationship to create the California State University and Community College Network, 4CNet. The role of 4CNet expands the role of CSUnet to the Community College Environment. It is the purpose of 4Cnet to serve the academic and administrative mission goals and objectives in ways that exploit centralized and distributed information resources for the separate and combined California State Universities and Community Colleges.

Organization

4CNet is managed and operated by The Telecommunications Infrastructure Support Services (TISS) team, a part of the Information Resources and Technology Division of the California State University Chancellor's Office. The California Community Colleges Chancellor's Office provides consultative leadership in the management and development of the network. The TISS organization has been developed to effectively fulfill this management function."

4Cnet currently provides Internet services to some public libraries and consortia within California, including the Peninsula and San Joaquin Valley Library Systems. State Library staff will continue discussions with 4Cnet in regard to their role as a service provider for some Library of California telecommunications projects.

Z39.50 Study

Linked Systems Study Update with Recommendations for the Future, Phase I, September 24, 1999, by Joan Frye Williams.

In June the State Library funded an LSTA grant to the Mountain-Valley Library System to contract with Joan Frye Williams for a follow-up study of Z39.50 projects and issues. The study was initiated following a meeting in June 1999 when several representatives from several Northern California Z39.50 projects met with State Library staff in Oakland to discuss issues related to their implementation of Z39.50. They identified the following problems:

- Results of Z39.50 searches were not consistent or equivalent when compared to searches using the local system online catalogs. Discrepancies between Z39.50 searching and local system searching of the same database(s) were significant.
- It was difficult or impossible to retrieve holdings and item level information from some Z39.50 servers.
- It was not possible in some cases to distinguish the separate holdings of jurisdictions that share a Z39.50 server.
- Vendors are not providing the detailed information needed to streamline configuration of cross-platform connections. Implementers spend large amounts of time trying to guess the proper combinations.
- Incompatibilities result from differences in local database indexing. The inclusion or exclusion of MARC fields in the indexing (e.g., author, title, subject) directly affects the search results.
- Some public services staff were not comfortable with any new approach that seems less than perfect.
- Some libraries have expressed the concern that the additional workload resulting from remote Z39.50 queries will degrade local system performance for their primary clientele.

It is important to note that the significance of these problems and issues varies among the various projects. The ability to connect and to derive meaningful results appears to relate more to the way the software is installed and configured than to the overall Z39.50 standard. Z39.50 was designed to allow for many different configurations, or implementations. It is the flexibility built into the standard that in some cases leads to inconsistent implementation.

The problems encountered in California are typical of Z39.50 problems encountered elsewhere. In many ways this situation is analogous to the early days of the MARC bibliographic standard when it took a considerable amount of time to develop the best practices for implementing the standard to achieve consistent and high quality results.

A copy of the study is included (Exhibit B). Some key findings:

“The principal finding of this Linked Systems Study Update is that California is making steady progress towards the creation of a virtual catalog for resource sharing purposes. Libraries are moving from demonstration of the feasibility of the linked systems concept to practical implementation of linking technology on a regional basis.

Some Linked Systems Projects have encountered implementation problems along the way; recommendations for addressing those problems are detailed in this report. None of these implementation problems is sufficiently serious to warrant any change in the overall statewide database strategy.

In the course of this study, it became clear that Linked Systems Projects represent just one part of the technology infrastructure necessary to support electronic resource sharing statewide. This report identifies twenty components of a proposed Library of California Technology Infrastructure, including:

1. Commitment
2. Local MARC Databases
3. Local Online Catalogs
4. Management-level Understanding of Basic Networking Issues
5. Technology Project Management Skills
6. Local Wiring and Data Communications Networks
7. Local Network Maintenance and Troubleshooting Skills
8. Internet Connections
9. Web-ready PCs for Internet Searching
10. Policies for Managing New Electronic Services
11. Internet Skills
12. Local System Upgrades to Web Browser-based Catalogs
13. Local Implementation of Z39.50 Client and Server Software
14. Regional Broadcast Search Systems
15. Interlibrary Loan Messaging System(s)
16. Interlibrary Loan Management and Extended Circulation System(s)
17. Materials Delivery and Return System(s)
18. Patron Authentication System(s)
19. Electronic Collections
20. Self-service Electronic Borrowing

For each of these twenty components, this report offers a brief description, assesses progress to date, indicates any problems encountered, notes programs

that currently support efforts in this area, and recommends additional activities for moving forward. This information is summarized in a chart at the end of this Policy Summary.

By developing future statewide technology policies and initiatives in the context of the proposed Library of California Technology Infrastructure, it should be easier to:

- move everyone forward by assisting libraries that are currently at different stages of implementation;
- reward innovators without widening the “digital divide” or leaving anyone behind;
- identify and address gaps in technology development statewide;
- coordinate the purchase of new computer hardware, software and services with the skills needed to use them effectively;
- develop programs that yield important benefits to local libraries as well as to cooperative projects, and
- coordinate federal, state and local investments in technology to maximize the return on available funds.

This study is the first part of a two-part study by Ms. Frye Williams to develop policies and recommendations for the Library of California Board. This first part focused on current projects and some of their implementation issues. While it touches on other issues, such as electronic interlibrary-loan and patron authentication, additional work will be done in this fiscal year to explore these areas in depth, along with the development of specific recommendations as to possible Board actions that will strengthen the Z39.50 server software grant program and possibly to expand it to include additional products and services.

Before implementing the study recommendations, staff proposes the following:

- That the study be disseminated to the library community for additional review and comment.
- That staff prioritize the recommendations within the study and develop specific implementation guidelines for Board consideration at its February, 2000 meeting.
- That work start immediately on the second part of the study.

CAL-ZIG Z39.50 LSTA Grant

Parallel with the linked systems study with Ms. Frye Williams staff developed a statewide LSTA grant proposal in collaboration with the Mountain-Valley Library

System to further the goals of developing improved support for Z39.50 implementers and to establish a mechanism for the exchange of information regarding Z39.50 projects in California. This effort, titled CAL-ZIG (California Z39.50 Implementers' Group), will establish electronic resources, including a listserv and web site, to further the goals of information sharing. In addition, it will conduct workshops, training activities and establish a multi-day institute, bringing together implementers, consultants, experts and vendors.

That the CAL-ZIG project and the recommendations from the Linked Systems Update Study overlap to a considerable degree is not coincidental. Staff and Ms. Frye Williams have maintained contact with each other throughout the development of the study and have agreed on the relevant issues and the methodologies for addressing them. It is expected that this level of collaboration will continue into the next study phase.

High-Speed Rural Telecommunications

State Library staff has continued to monitor the Gates Center for Technology Access (GCTA) as they study the high-speed telecommunications needs of California libraries. While this work is targeted for public libraries, the findings will be applicable to all types of libraries. State Library staff have delayed a study of a rural telecommunications with the expectation that what the GCTA learns as it deploys telecommunications services in rural libraries will be applicable to the Library of California and to non-public libraries.

During the pre-applications workshops in October, State Library and GCTA staff discussed the 4Cnet program and GCTA attempts to provide telecommunications services to the most remote public libraries in the state. It was agreed that GCTA would provide information to CSL staff that would help them identify those most troublesome sites so that recommendations might be drafted for Board consideration regarding the possibility on ongoing support.

Relevant Committee:	Support Services
Staff Liaison:	Mark Parker